Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Expanding Flexible Use of the 3.7 to 4.2 GHz Band	)	GN Docket No. 18-122
	)	

COMMENTS OF THE CONTENT COMPANIES

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SUMMARY

CBS Corporation, Discovery, Inc., FOX Corporation, The Walt Disney Company, Univision Communications Inc., and Viacom Inc. (collectively, the "Content Companies") have participated actively throughout this proceeding to find a solution that will both protect reliable video delivery in the U.S. and free up mid-band spectrum for 5G uses. In the 13 months since the NPRM was issued, the Content Companies, C-band Alliance ("CBA"), the National Association of Broadcasters ("NAB"), and other programmers and stakeholders have worked collaboratively and agreed in principle on a plan that would achieve these goals by reallocating 200 MHz of the C-band, balanced with appropriate protections to mitigate the likelihood of interference to reception of video downlink by earth station incumbents in the repacked band at 3900-4200 MHz. That plan is ripe for adoption.

In contrast, the proposal of the ACA Connects Coalition to overhaul the video distribution system in the U.S. from satellite to fiber does not grapple with substantial science and engineering questions. In particular, the ACA Connects Coalition proposal underestimates the complexity, timing, reliability challenges, and cost that would arise from an attempt to change the video distribution infrastructure from one based primarily on satellite to one based mostly on fiber.

Similarly, AT&T proposes to weaken out-of-band emission limits and other protections that are key to maintaining interference-free satellite video downlinks adjacent to a new 5G, flexible use band. And, the proposal to populate the repacked C-band with fixed, point-to-multipoint terrestrial transmission threatens to make a difficult repacking task impossible.

The Content Companies accordingly urge the Commission to return focus to proposals on which comment was sought in the NPRM, and specifically to finish the work necessary to

reallocate 200 MHz of C-band spectrum while protecting video distribution to over 120 million American households.

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CBS Corporation, Discovery, Inc., FOX Corporation, The Walt Disney Company, Univision Communications Inc., and Viacom Inc. (collectively, the "Content Companies") file these comments in response to the Commission's Public Notice ("Public Notice") in the above-captioned proceeding, which seeks further comment on the future of the 3.7-4.2 GHz spectrum band ("C-band") and specifically on new proposals filed after the close of the comment period on last year's Notice of Proposed Rulemaking ("NPRM").[1]

Since releasing the NPRM in July 2018, the Commission has amassed an extensive record as to how it could meet the "joint goals" of quickly and efficiently making mid-band spectrum available for 5G uses while at the same time "protect[ing] incumbent earth stations from harmful interference."[2] The Content Companies have actively participated in this process since the start.

After discussions with stakeholders and careful consideration of the record, the Content Companies concluded over two months ago that "of the plans in the record for reallocation of C-

[1] *Wireless Telecommunications Bureau, International Bureau, Office of Engineering and Technology, and Office of Economics and Analytics Seek Focused Additional Comment in 3.7-4.2 GHz Band Proceeding*, Public Notice, DA 19-678, GN Docket No. 18-122 et al. (rel. July 19, 2019) (hereinafter "Notice"); *In re Expanding Flexible Use of the 3.7 to 4.2 GHz Band et al.*, Order and Notice of Proposed Rulemaking, FCC 18-91, GN Docket No. 18-122 et al. (rel. July 13, 2018) (hereinafter "NPRM").

[2] NPRM at ¶¶ 2, 27

band spectrum, only that of the C-band Alliance ('CBA') gives serious attention to how the Commission could preserve reliable video delivery over the C-band."[3] That plan relies upon a mix of interdependent protections to reallocate 200 MHz of spectrum from the C-band—all while mitigating the likelihood of harmful interference to the satellite-based backbone for video delivery that some 120 million American households depend upon, regardless of how they consume video content.[4]

With a consensus emerging around a plan that would both preserve the reliability of satellite-delivered video downlinks *and* make nearly 200 MHz of mid-band spectrum available for 5G, the proposals in the Public Notice propose an entirely different course, one that has yet to be tested or subjected to meaningful scrutiny. In particular, the Public Notice focuses on a proposal submitted by ACA Connects - America's Communications Association, the Competitive Carriers Association, and Charter Communications, Inc. (the "ACA Connects Coalition"). That plan speculates, wrongly, that the Commission could, via regulatory mandate, overhaul the distribution of video programming in the United States from a satellite-based system to one that relies almost exclusively on fiber—and for the most part in a mere "18 to 36 months."[5]

To be clear, the Content Companies view fiber as an important component of video distribution today and into the future. The question before the Commission is not one of "fiber vs. satellite." The ACA Connects Coalition proposal, however, underestimates the complexity,

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[3] Letter from Matthew S. DelNero to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 18-122 (June 7, 2019) (hereinafter "Content Companies June 7 Ex Parte").

[4] *See, e.g.*, Letter from Rick Kalan, NAB to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed Aug. 1, 2019) ("NAB urged the Commission to move forward with reallocation of 200 MHz of the C-band, as that approach generally speaking can both free up a large swath of spectrum while protecting existing users.").

[5] *See* Letter from ACA Connects, ACA, and Charter, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed July 2, 2019) (hereinafter "ACA Connects Coalition Proposal"); Notice at 2.

timing, and cost that would be necessary to fundamentally change the video distribution infrastructure from one based primarily on satellite to one based mostly on fiber. Even in a best-case scenario, the shift to a primarily fiber-based video delivery system would take an unknown number of years to complete and cost far more than the estimated $6 to $7 billion dollars.

The Content Companies urge the Commission to return focus to realistic solutions that include sufficient protections for video content delivery over the C-band while still making mid-band spectrum available for 5G uses. And contrary to the AT&T proposal that the Public Notice also requests comment on, the protections in the CBA proposal are an interdependent "package deal" that can only sufficiently protect video content delivery in their totality. The Commission therefore should not simply pick and choose from among those protections for C-band video content delivery, as lessening one element could require strengthening several others to achieve the same overall level of protection and reliability.

Finally, the Commission should make clear that it will not allow co-channel sharing with fixed wireless services in the repacked portion of the C-band. As myriad parties in this proceeding have made abundantly clear numerous times, allowing co-channel sharing between fixed satellite services ("FSS") and fixed wireless services in a repacked C-band would make a successful repacking scheme impossible, and the Commission should reject the latest version of this proposal set forth in the Public Notice.

I. THE CBA PROPOSAL TO REALLOCATE 200 MHZ OF C-BAND SPECTRUM COULD ACHIEVE THE TWIN GOALS OF FREEING UP MID-BAND SPECTRUM FOR 5G WHILE PRESERVING A RELIABLE, NATIONWIDE VIDEO DELIVERY SYSTEM.

While most of the American people have never heard of the C-band, it serves as the backbone of the infrastructure for delivering video content to them. The Content Companies and other programmers rely every day on FSS downlink transmissions in the C-band to distribute

some of the nation's most popular sports, news, and entertainment programming to nearly 120 million American television households. Those households in turn represent over 300 million Americans and billions of dollars in value to the American economy.[6]

The C-band is intensively used to deliver video programming regardless of the methods or devices Americans use to consume video content. It is the principal pathway for the delivery of programming to each of the thousands of head-ends of MVPDs and each of the well over 1,000 broadcast television stations affiliated with national television networks. Programmers likewise use the C-band to deliver content to over-the-top video distributors. And many programmers depend upon temporary fixed links in the C-band to transmit breaking news and live events from the field back to studios and on to viewers.

At the same time that the Content Companies depend upon the C-band to deliver video throughout the country, they share the desire to free up some amount of mid-band spectrum for 5G. Based on the NPRM, the Content Companies recognized the seriousness with which the Commission was considering the proposal of the CBA to reallocate up to 200 MHz of C-band spectrum to 5G uses. The Content Companies studied the CBA proposal carefully, met extensively with CBA technical, operational, and legal representatives, collaborated with other stakeholders, such as NAB, and offered feedback on certain details concerning the plan. During this time, the Content Companies have kept Commission staff apprised of the status of these discussions. While some details remain to be finalized, the result of this collaboration has been to clear a pathway by which 200 MHz of the C-band could be reallocated, reducing spectrum

[6] *See, e.g.*, Comments of the Content Companies, GN Docket No. 18-122 at 2 (filed Oct. 29, 2018) (hereinafter "Content Companies NPRM Comments"); Comments of the Content Companies, GN Docket No. 18-122 at 1-3 (filed May 31, 2018); Comments of the Content Companies, GN Docket No. 17-183 at 1 & n.2 (filed Oct. 2, 2017) (hereinafter "Content Companies NOI Comments").

used by video downlinks by *40 percent*—and all within three years. Making this transition would be complex and entail risks, but the Content Companies have approached this proceeding in a spirit of compromise and pragmatism and believe that, with hard work, cooperation and planning, the plan to reallocate 200 MHz of C-band spectrum can work.

II. THE ACA CONNECTS COALITION PROPOSAL UNDERESTIMATES THE COMPLEXITY, COST, TIMING AND RISKS OF OVERHAULING THE CONTENT DISTRIBUTION SYSTEM IN THE UNITED STATES.

On paper, the ACA Connects Coalition proposal seeks to "refarm for terrestrial wireless use a *minimum* of 370 MHz" of C-band spectrum, an amount that "could increase" to further reallocate even the 130 MHz of spectrum that would remain available for FSS earth stations.[7] The proposal would transition all MVPD earth station users that currently rely on C-band to fiber, with estimated transition costs of $6 to $7 billion, and estimated timing of 18 months in "urban areas," three years "in the majority of the remaining areas," and five years "in a few select areas."[8] This transition process would allegedly be "seamless and fast,"[9] but the transition from the current C-band-based system to an all-fiber system would in fact be quite difficult.

The fact remains that the video distribution system in the United States is built atop the C-band, and it relies on point-to-multipoint satellite video downlinks to reach thousands of head-ends and broadcast television stations. Fiber roll-outs today and for the foreseeable future do not serve large swaths of the country, and even where fiber does exist it is useful as a complement to—not a replacement for—C-band video delivery. Thus, while fiber is already a

[7] ACA Connects Coalition Proposal at 3 (emphasis added).

[8] *Id.* at 4–5.

[9] *Id.* at 3.

complementary component of many video delivery transmissions, it is far from a state where it could replace the ubiquity and reliability of the C-band for this purpose.

Reliability. The Public Notice asks how "sufficient network reliability" would "be achieved" with an approach based on the ACA Connects Coalition proposal.[10] It would not, at least for the foreseeable future with respect to video content delivery. The current C-band system relies on a proven, single, integrated, and highly reliable infrastructure wherein video content moves directly from hundreds of content sources to a couple dozen C-band satellites and from those satellites directly to thousands of earth stations. Instead, under a primarily fiber-based plan, there would need to be hundreds of thousands of direct one-to-one fiber connections between each of the hundreds of content sources and thousands of earth stations.[11] And even the "variant" using "super" head-ends raised, for the first time, in the Public Notice would replace the current easily scalable distribution system with tens of thousands of direct fiber connections between the aggregation points and the earth stations.[12]

Under the current C-band distribution system, uptime is approximately 99.999 percent, translating to outages of less than six minutes *per year*.[13] Meanwhile, a single fiber cut lasting just one day would reduce that 99.999 percent reliability to 99.7 percent. That may sound to the untrained ear like an insignificant reduction in reliability, but that rate of outages would be

[10] Notice at 3.

[11] *See* CBA Attachment at 4–5.

[12] *See* CBA Attachment at 6. These aggregation points would also be extremely complex to implement to accommodate numerous different services with differing service quality requirements, with no single party maintaining responsibility for end-to-end service quality.

[13] *Id.* at 12.

completely unacceptable for video content delivery services that reach millions of consumers at the same time.

Nor are fiber cuts a mere theoretical concern. Comcast experienced a massive outage of its internet service just last year due to a fiber cut.[14] Were a similar event to occur in a scenario where the entire video distribution network relied almost exclusively on fiber, viewers would be subject to an unacceptable and potentially prolonged outage during a major sporting event or national coverage of a weather emergency. It is therefore not surprising that numerous commenters have explained that a primarily fiber-based system is not today a suitable substitute for the unmatched reliability required by C-band users.[15] While, in theory, it may be possible through substantially greater cost and time to develop a fiber system with higher levels of reliability (particularly through redundant links and carrier diversity), there is no evidence that

[14] Lily Hay Newman, *Friday's Massive Comcast Outage Shows How Fragile the Internet Is*, Wired.com (June 29, 2018) (Comcast outages "stemmed from fiber optic cables at two internet infrastructure companies that were cut or otherwise disrupted."); *see also* CBA Attachment at 12.

[15] *See, e.g.*, Content Companies NPRM Comments at 3–4; Content Companies June 7 Ex Parte (fiber and other technologies "are complements, not substitutes, to the C-band"); Comments of NCTA - The Internet & Television Association, GN Docket No. 18-122 et al. at 10 (filed Oct. 29, 2018) (hereinafter "NCTA Comments") ("fiber does not provide the 99.999% reliability that NCTA's members have come to rely on from C-band"); Reply Comments of GCI Communication Corp., GN Docket No. 18-122 et al. at 8 (filed Nov. 27, 2018) (fiber advocates "fail to address the high likelihood of disruption due to fiber cuts, lack of redundancy, inability to lay fiber due to government-related or nature-related conditions, and high deployment and maintenance costs"); Comments of Comcast Corporation and NBCUniversal Media, LLC, GN Docket No. 18-122 et al. at 17–20 (filed Oct. 29, 2018); Comments of the C-Band Alliance, GN Docket No. 18-122 et al. at 14–15 (filed Oct. 29, 2018) (hereinafter "CBA Comments"); Comments of the National Association of Broadcasters, GN Docket No. 18-122 et al. at 5–6 (filed Oct. 29, 2018); Comments of the American Cable Association, GN Docket No. 18-122 et al. at 3–4 (filed Oct. 29, 2018).

the primarily fiber-based video distribution system on which the Public Notice seeks comment would be engineered to achieve 99.999% of reliability.[16]

Accountability & Enforcement. The ACA Connects Coalition proposal does not specify which entity or entities, if any, will be ultimately responsible for managing a transition process of hundreds of individually-owned cable head-ends from satellite to fiber. A transition this complicated needs some entity to undertake project management and systems integration functions associated with implementation of a vast new set of fiber connections. If, for example, the ACA Connects Coalition proposal fails to proceed within the promised timelines, there would be no particular entity accountable for that failure. Nor is there any entity positioned to undertake enforceable commitments regarding the ongoing availability and reliability of the video distribution network via the new system. Reliable nationwide video delivery is too important to be left to a proposal with no real accountability or enforceability.

Need for Additional Satellites. The ACA Connects Coalition proposal claims that its plan would not require the launch of additional satellites for at least three years.[17] This assumes that non-MVPD (including broadcast) programming, which the proposal asserts can be served using just 130 MHz or less spectrum, can be serviced using only the current in-orbit satellites. But the proposal itself acknowledges that not all cable headends will be transitioned to fiber within three years, with some taking up to five years. As such, both MVPD and non-MVPD programming will need to be distributed via satellite to some degree for at least five years even under the proposal's overly optimistic predictions. The ACA Connects Coalition proposal also

[16] The ACA Connects Coalition proposal helpfully acknowledges the need for "redundant paths," but does not include any details as to how the requisite redundant fiber lines would be installed and operational within the proposal's aggressive transition timeline. *See* ACA Connects Coalition Proposal at 4.

[17] Letter from Pantelis Michalopoulos to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 18-122, Attachment at 39 (filed July 9, 2019).

treats the 24 in-orbit satellites as fungible, when in fact using alternate satellites would require cable headends to install new antennas pointing to new orbital locations. Even assuming cable head ends have sufficient available real estate with the proper look angles to host these new antennas, the ACA Connects Coalition proposal does not account for this increased complexity, cost, and time to implement their proposal. And the proposal overlooks the fact that moving content from one frequency or satellite to another requires at least three months of dual illumination to ensure that all earth stations are properly pointed and tuned to the new frequency or satellite. Dual illumination requires twice the satellite capacity just to deliver the same content during the relevant time period.

Timing. As noted above, the ACA Connects Coalition proposal anticipates an unrealistic timeline for the proposed total overhaul of the nationwide video delivery system, including clearing 370 MHz of C-band spectrum in 18 months in urban areas. The proposal does not provide any further detail or support for these estimates beyond stating that they "believe" them to be "reasonable and achievable."[18]

In reality, even in urban areas this transition would more likely take at least five years in a best case scenario, and more than a decade for the transition to occur nationwide.[19] Outfitting satellite facilities, data centers, and cable headends with the additional equipment necessary to switch to fiber-based delivery requires a considerable amount of time to design, deploy, and test before it can become operational. As CBA has noted, even just *designing* a fiber-based delivery

[18] ACA Connects Coalition Proposal at 4.

[19] *See* Letter from Jennifer Hindin to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 18-122 (filed July 2, 2019) (noting that T-Mobile's fiber-based proposal is "enormously complex, would lack the reliability of C-band satellite distribution, and would take a decade or more to complete, costing the U.S. economy tens of billions of dollars").

plan could take more than two years.[20] And deploying fiber, particularly in densely populated urban areas, will be anything but fast. In some cities, it can take longer than 18 months just to obtain the permits and rights of way necessary to lay fiber to cable headends where it is not currently available or not sufficiently diverse and redundant.

Further, transmissions from wireless base stations do not simply stop at the boundary of "urban areas," but can impact headends as far as 100 kilometers away from an urban center.[21] These hundreds of additional headends, many of which are in rural areas, will also need to be connected via fiber to prevent interference to the base stations within the urban area. The ACA Connects Coalition proposal does not account for these additional headends, which significantly undermines the proposal's promise to transition all urban areas to a fiber-based distribution system in 18 months.[22]

History with other major technological transition points to the implausibility of the 18-36 month (and even the five-year) estimate. For example:

- 800 MHz Re-banding (10+ years late). In 2004, the FCC adopted a plan to reconfigure the 800 MHz band to address interference to public safety communications, by spectrally separating public-safety LMR systems from Nextel's (later Sprint's) commercial cellular networks in the band. The FCC-appointed Transition Administrator set forth a plan to complete this process in three years between July 2005 and July 2008.[23] In fact, unanticipated challenges

[20] *Id.*

[21] CBA Attachment at 10.

[22] Notably, Charter itself has encountered significant delays in rolling out fiber to certain areas of New York State. *See* Jon Campbell, *New York Kicks Charter Spectrum Out: What It Means For You*, DemocratandChronicle.com (July 28, 2018), https://www.democratandchronicle.com/story/news/politics/albany/2018/07/27/new-york-charter-spectrum-what-means/851039002/ ("New York claims Charter has repeatedly missed deadlines to expand its broadband service to less-densely populated areas of the state, which was part of the merger agreement.").

[23] *See, e.g.*, Donny Jackson, *Ten years later, 800 MHz rebanding proves to be an enlightening exercise*, Urgent Communications (July 4, 2014), https://urgentcomm.com/collections/ten-years-later-800-mhz-rebanding-proves-to-be-an-enlightening-exercise/.

meant that the bulk of the re-banding process was not complete until 2012, and to this date some work remains to be done.[24]

- TDM-to-IP Transition (no completion date in sight). Since the early part of this century, telecommunications networks in the United States have been undergoing a transition from TDM-based technologies to IP-based networks and services. During the past decade, the Commission has articulated multiple times a goal of facilitating the transition to all-IP networks. In its 2012 Annual Report, AT&T announced that it expected to "have fully transitioned our customers from decades-old technologies to an all-Internet Protocol network architecture" by 2020.[25] While much progress has been made in this transition, no carrier, including AT&T, has come close to completing this transition to all-IP networks.[26] This is not for lack of trying, but rather due to practical challenges accompanying any major technology transition that impacts multiple parties and requires substantial changes in equipment, processes, procedures, and testing.

- 2 GHz BAS Transition (three years late). To free up spectrum in connection with its partial move out of the 800 MHz band, Sprint agreed in 2004 to relocate Broadcast Auxiliary Services ("BAS") in the 2 GHz band from analog to digital systems and thus to a smaller bandplan. The plan was to take place from 2005-2007. The actual transition, however, was not completed until three years later in 2010.

The above are just three examples of technology transitions that have taken longer than expected. In each case, the delay is not due to any lack of good faith of the actors involved, but rather the inevitable challenges of changing systems across the United States from one technology to another. For the reasons described above, the proposed transition of video distribution from primarily satellite to primarily fiber would be even more complex than many, if not all, past transitions.

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[24] *See* Letter from James Goldstein, Sprint Corp. to David Furth, PSHSB, WT Docket No. 02-55 (filed Feb. 1, 2019) ("As described further below, 800 MHz band reconfiguration continues to make significant progress in the few remaining Regions left to fully complete rebanding").

[25] AT&T 2012 Annual Report (Feb. 11, 2013), at 5.

[26] *See.e.g.*, Comments of the Competitive Carriers Association, GC Docket No. 17-59, WC Docket No. 17-97 (filed July 24, 2019), at 2 ("The Commission also should be mindful that many carriers, particularly in rural America, continue to operate TDM networks or receive significant amounts of traffic via TDM tandems.").

Costs. The ACA Connects Coalition proposal states that costs would be advanced for the transition to fiber from a fund sourced from spectrum auction proceeds, with total costs estimated at $6 to $7 billion. The Content Companies agree with the CBA that the actual cost of transitioning to fiber will be "orders of magnitude more expensive" than the current C-band system, and the ACA Connects Coalition proposal does nothing to remediate that substantial increase.[27] Nor does the proposal account for substantial operations, staffing, and training costs that would be incurred on both a recurring and non-recurring basis to transition to a fiber-based distribution system. And even under the proposal's overly optimistic timelines, there will be substantial costs associated with operating *both* C-band and fiber based distribution networks for rural headends in the unspecified "few select areas" for five years (or, as discussed above, much longer), not to mention the testing period for fiber configurations during which time the C-band system would need to continue until such time the fiber-based system can match the required level of reliability that C-band distribution already provides.

Rather than adopting an untested and overly optimistic plan to transition nationwide video delivery to a system based primarily on fiber, the Commission should focus on plans that can demonstrate, via enforceable conditions, that they will sufficiently protect current and future video delivery services. The only plan in the record that has come close to meeting that standard is the CBA plan to reallocate 200 MHz, or some *forty percent*, of the C-band using a series of interrelated protections that are essential to preserving reliable video delivery in the United States. These include reallocation of no more than 200 MHz, other technical safeguards, measures to maintain satellite capacity for video distribution, and strong enforcement and

[27] CBA Attachment at 2.

oversight mechanisms.[28] The Content Companies have made clear on the record a series of safeguards necessary to preserve nationwide video delivery, and the CBA "agrees with all of them."[29] AT&T's proposed "refinement" to weaken several of the strong protections included in CBA's proposal—including the 150-meter radius around registered earth stations, out-of-band emission limits, and other protections—does not adequately consider the fact that these protections work in concert. For instance, relaxing out-of-band emission limits could require repurposing less than the 200 MHz in the CBA's proposal to account for the more substantial interference concerns that would result.

III. THE RECORD IS ABUNDANTLY CLEAR THAT ALLOWING FIXED WIRELESS USE WOULD BE FATAL TO ANY EFFORT TO REPURPOSE C-BAND SPECTRUM WHILE PROTECTING VIDEO DELIVERY.

As this proceeding has evolved, the challenges associated with proposals to repurpose C-band spectrum for mobile usage have only become more apparent, as described above. Particularly in that environment, the Commission should heed the warnings of a broad cross-section of commenters in this proceeding that allowing new fixed-to-multipoint transmissions (i.e., fixed wireless broadband) into the portion of the C-band that remains available for video delivery would be fatal to the Commission's efforts to repurpose C-band spectrum while protecting incumbent uses.[30] Despite that reality, the Notice seeks comment on yet another proposal to do just that by the Wireless Internet Service Providers Association ("WISPA"),

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[28] Content Companies June 7 Ex Parte, Attachment; Letter from Matthew S. DelNero to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 18-122 (May 2, 2019), Attachment.

[29] Letter from Jennifer D. Hindin to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 18-122 (May 15, 2019).

[30] *See, e.g.*, Reply Comments of the Content Companies, GN Docket No. 18-122 at 8–10 (filed Dec. 11, 2018); CBA Comments at 39–52; Comments of T-Mobile USA, Inc., GN Docket No. 18-122 et al. at 20–22 (filed Oct. 29, 2018); Comments of CTIA, GN Docket No. 18-122 et al. at 25–27 (filed Oct. 29, 2018); NCTA Comments at 21; Comments of AT&T Services, Inc., GN Docket No. 18-122 at 13–15 (filed Oct. 29, 2018).

Google, and Microsoft.[31] The Commission should reject this latest attempt to repackage the prior Broadband Access Coalition ("BAC") proposal to introduce fixed wireless broadband into the C-band.

As the Content Companies have noted, the C-band is quite crowded even as it stands today.[32] And of course, it would only become even more crowded if and when the Commission repacks the existing C-band into a smaller portion of the band. A repacked C-band could not, as a matter of physics, accommodate new fixed wireless broadband uses, even if these fixed wireless services operated on a secondary basis to FSS. Point-to-multipoint transmissions necessarily emit high-powered signals in many directions, which greatly increases the difficulty of frequency coordination and the potential for harmful interference to existing C-band usage.[33]

And as was the case with the NPRM and the prior BAC proposal, the current proposal does not include any concrete explanation as to how the existing C-band usage by the Content Companies and others would be adequately protected.[34] For instance, the proposal relies on a single study to support the notion that exclusion zones of less than 10 kilometers "will not cause harmful interference to co-channel FSS," when in fact the study only concludes that 10 kilometers would be "sufficient to protect *most*" FSS earth stations with little explanation of which earth stations would *not* be protected, how that protection would operate in the event interference did occur, or how the alleged protection would be enforceable.[35]

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[31] Notice at 5.

[32] *See* Content Companies NPRM Comments at 10–11.

[33] Content Companies NPRM Comments at 11.

[34] *See* NPRM at ¶¶ 116–19; *see also* Content Companies NOI Comments at 7–8.

[35] Letter from Wireless Internet Service Providers Association, Google LLC, and Microsoft Corp. to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 at 2; Attachment at 3, (filed July 15, 2019) (emphasis added).

CONCLUSION

Today, the C-band serves as the backbone for distributing video programming to nearly 120 million American households with 99.999 percent reliability. The Commission has before it a path to adopt the CBA plan that will preserve the reliability of that system while reallocating 200 MHz of mid-band spectrum. The Content Companies urge the Commission to take that path over proposals for more complex, costly, and risky plans. These proposals have not demonstrated that they would serve the Commission's articulated goals of quickly repurposing mid-band spectrum for mobile usage, while at the same time protecting incumbent uses on which the American public relies every day.

Respectfully submitted,

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